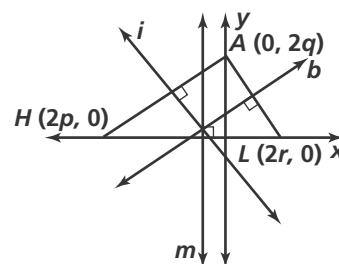


Practice 6-7

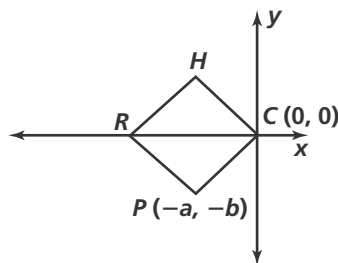
Proofs Using Coordinate Geometry

1. Given $\triangle HAL$ with perpendicular bisectors i , b , and m , complete the following to show that i , b , and m intersect in a point.
 - a. The slope of \overline{HA} is $\frac{-q}{p}$. What is the slope of line i ?
 - b. The midpoint of \overline{HA} is (p, q) . Show that the equation of line i is $y = \frac{p}{q}x + q - \frac{p^2}{q}$.
 - c. The midpoint of \overline{HL} is $(r + p, 0)$. What is the equation of line m ?
 - d. Show that lines i and m intersect at $(r + p, \frac{rp}{q} + q)$.
 - e. The slope of \overline{AL} is $\frac{-q}{r}$. What is the slope of line b ?
 - f. What is the midpoint of \overline{AL} ?
 - g. Show that the equation of line b is $y = \frac{r}{q}x + q - \frac{r^2}{q}$.
 - h. Show that lines b and m intersect at $(r + p, \frac{rp}{q} + q)$.
 - i. Give the coordinates for the point of intersection of i , b , and m .

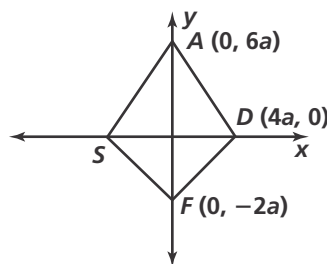


Complete Exercises 2 and 3 without using any new variables.

2. $RHCP$ is a rhombus.
 - a. Determine the coordinates of R .
 - b. Determine the coordinates of H .
 - c. Find the midpoint of \overline{RH} .
 - d. Find the slope of \overline{RH} .



3. $ADFS$ is a kite.
 - a. Determine the coordinates of S .
 - b. Find the midpoint of \overline{AS} .
 - c. Find the slope of \overline{AS} .
 - d. Find the midpoint of \overline{DF} .
 - e. Find the slope of \overline{DF} .



4. Complete the coordinates for rectangle $DHCP$. Then use coordinate geometry to prove the following statement: The diagonals of a rectangle are congruent (Theorem 6-11).

Given: rectangle $DHCP$

Prove: $\overline{DC} \cong \overline{HP}$

